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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/621,425	07/17/2003	Angeliki Alexiou	3-3	1744

7590 12/29/2005

Lucent Technologies, Inc.  
Docket Administrator (Room 3J-219)  
101 Crawfords Corner Road  
Holmdel, NJ 07733-3030

EXAMINER

NGUYEN, SIMON

ART UNIT PAPER NUMBER

2685

DATE MAILED: 12/29/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

10/621,425

**Applicant(s)**

ALEXIOU ET AL.

**Examiner**

SIMON D. NGUYEN

**Art Unit**

2685

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on 15 January 2004.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 and 12-16 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 7, 8 and 12-16 is/are rejected.
- 7) ☒ Claim(s) 5, 6, 9 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)               | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____  | 6) <input type="checkbox"/> Other: _____                                    |

## DETAILED ACTION

### ***Claim Rejections - 35 USC § 102***

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1, 3-4, 15-16 are rejected under 35 U.S.C. 102(e) as being anticipated by Onggosanusi et al. (2003/0210750 A1).

Regarding claim 1, Onggosanusi discloses a MIMO diversity transmitter having a plurality of antennas (abstract, fig.2a), comprising: space time block encoding for data sequence; applying to the data sequence a linear transformation depending on correlation among the antennas for compensate the transmitted signals (figs.1-2, paragraphs 18, 22, 23, 24, 34, 47, 76-77, 118), wherein the linear transformation depends on the eigenvalues of an antenna correlation matrix and a ratio of symbol energy to noise variance (paragraphs 47, 85, 92-96, 118, 145).

Regarding claim 15, this claim is rejected for the same reason as set forth in claim

1.

Regarding claim 3, Onggosanusi further discloses the linear transformation is applied prior to block encoding (figs.2a, c).

Regarding claim 4, Onggosanusi further discloses the linear transformation depends on the eigenvector of the antenna correlation matrix (paragraphs 31-32, 47, 69-70, 140).

Regarding claim 16, Onggosanusi further discloses a receiver for space time decoder, a channel estimator, and the antenna correlation matrix being determined from the received channel estimates ((figs.1b,c, 2b, paragraphs 22, 25, 27, 36, 45-46, 50, 53, 55, 77, 122).

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 7-8, 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onggosanusi et al. (2003/0210750).

Regarding claim 7, this claim is rejected for the same reason as set forth in claim 1, in which Onggosanusi discloses the antenna correlation matrix, the eigenvalues of the antenna matrix, ratio of symbol energy to noise, and using these information to determine the linear transformation for 4 antenna (figs.2a,c). However, Onggosanusi fails to disclose first and second processors for executing different tasks.

It should be noted that Onggosanusi discloses the system in which one or more digital signal processors used to perform the linear transformation (paragraphs 20, 127).

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Therefore, it would have been obvious to one skilled in the art to have Onggosanusi, use different processors to perform different tasks in order to reduce the burden on using one processor.

Regarding claims 12 and 14, these claims are rejected for the same reason as set forth in claim 7.

Regarding claim 8, this claim is rejected for the same reason as set forth in claim 4.

Regarding claim 13, Onggosanusi further disclose receivers with decoder for decoding the channel matrix and the linear transformation matrix (figs.1b,c, 2b, paragraphs 22, 25, 27, 36, 45-46, 50, 53, 55, 77, 122).

5. Claims 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onggosanusi et al. (2003/0210750) in view of Onggosanusi et al. (20030026347).

Regarding claim 2, Onggosanusi- 750 does not specifically disclose the linear transformation is applied prior to an encoder. Onggosanusi-347 discloses the linear transformation is applied prior to an encoder (paragraph 81). Therefore, it would have been obvious to one skilled in the art to have Onggosanusi-750 with modified Onggosanusi-347 in order to achieve certain levels of performance with varying requirements for signal processing.

***Allowable Subject Matter***

6. Claims 5-6, 9-10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Regarding claims 5 and 9, the prior art of record does not specifically disclose an equation as claimed for calculating the linear transformation.

Regarding claims 6 and 10, these claims are objected for dependent upon claims that have been objected.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Simon Nguyen whose telephone number is (571) 272-7894. The examiner can normally be reached on Monday-Friday from 7:00 AM to 4:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Edward F. Urban, can be reached on (571) 272-7899.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 306-0377.

Any response to this action should be mailed to:

Commissioner of Patents and Trademarks  
600 Dulany, Alexandria, VA 22314

Or faxed to:

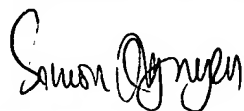
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(571) 273-8300 (for formal communications intended for entry)

Hand-delivered response should be brought to Customer Service Window  
located at the Randolph Building, 401 Dulany, Alexandria, VA, 22314.

Simon Nguyen

December 19, 2005

A handwritten signature in black ink, appearing to read "Simon Nguyen", with a stylized flourish at the end.

**SIMON NGUYEN**  
**PRIMARY EXAMINER**